

What is claimed is:

1 1. A method for providing a plurality of service functions to a
2 plurality of users by a storage system, comprising:
3 receiving a request by a user of said plurality of users for performance of a
4 service function of said plurality of service functions;
5 checking if said service function is allowed by said storage system
6 according to a usage constraint, said usage constraint comprising a storage area needed by
7 said service function; and
8 when said service function is allowed, performing said service function by
9 said storage system.

1 2. The method of claim 1 wherein said usage constraint further
2 comprises a user number limitation for said service function.

1 3. The method of claim 1 wherein said receiving said request by said
2 user is via a server provider system (SPS).

1 4. The method of claim 1 wherein said usage constraint comprises all
2 other storage areas needed by all current user of said service function on said storage
3 system.

1 5. The method of claim 4 wherein said usage constraint is an
2 accumulation of storage areas of users of said service function.

1 6. The method of claim 1 wherein all of said plurality of service
2 functions are turned on in said storage system.

1 7. A method for providing a service function to a user by a storage
2 system, comprising:
3 receiving a request by a user for performance of a service function;
4 checking if said service function is allowed by said storage system
5 according to a usage constraint, said usage constraint comprising a storage area needed by
6 said service function; and
7 when said service function is allowed, performing said service function by
8 said storage system.

1 8. The method of claim 7 wherein said usage constraint further
2 comprises a user number limitation for said service function.

1 9. A service provider system for providing a plurality of service
2 functions to a plurality of users, comprising:

3 a storage system comprising said plurality of service functions, wherein a
4 service function of said plurality of service functions has a predetermined limit on a
5 number of said plurality of users that have access to said service function; and

6 a service provider server for providing said plurality of users with said
7 plurality of service functions of said storage system.

1 10. The service provider system of claim 9 further comprising, a
2 second storage system comprising said plurality of service functions, wherein all service
3 functions of said plurality of service functions have been activated for use.

1 11. The service provider system of claim 9 wherein said storage system
2 further comprises a user access information table for managing data of users of said
3 plurality of users having access to said storage system.

1 12. The service provider system of claim 9 wherein said service
2 provider system further comprises a data management table including information for
3 identifying a user of said plurality of users, information on said service function, and
4 information for managing data on the user.

1 13. The service provider system of claim 9 wherein storage system
2 further comprises a user access information table comprising information for identifying a
3 user of said plurality of users and a service function bit map for determining activated
4 service functions of said plurality of service functions for said user.

1 14. The service provider system of claim 13 wherein said user access
2 information table further comprises an area capacity for each activated service function.

1 15. A storage system for providing a plurality of service functions to a
2 plurality of users via a service provider system, comprising:

3 a user access information data structure indicating for a service function of
4 said plurality of service functions selected users of said plurality of users that have access
5 to said service function;

6 a controller for checking said user access information data structure, when
7 receiving a request from said service provider system for access by a user of said plurality
8 of users to said service function; and

9 a storage unit having a storage area for use by said service function, when
10 said controller indicates said user has access to said service.

1 16. The storage system of claim 15 wherein said user access
2 information data structure further comprises a cumulative storage area value for some
3 users of said plurality of users having access to said service function.

1 17. The storage system of claim 16 wherein said controller checks for
2 user access permission to said service function based on a result dependant upon a
3 number of said some users having access and said cumulative storage area value for said
4 some users.

1 18. The storage system of claim 15 wherein said result is dependant
2 upon a position with respect to a curve of cumulative storage capacity versus number of
3 users, said curve representing a license from a vendor to said service provider.

1 19. The storage system of claim 15 wherein said user access
2 information data structure is a table.

1 20. A method for providing a plurality of service functions on a
2 plurality of storage systems to a plurality of users via a service provider system, said
3 method comprising:

4 said service provider system receiving a request for performance of a
5 service function of said plurality of service functions from a user of said plurality of
6 users;

7 determining a selected storage system of said plurality of storage systems
8 based on said user and said service function;

9 calculating a storage area needed by said service function; and

002269358 - 062432

10 when said storage area added to a total storage area currently required by
11 other users of said service function on said selected storage system does not exceed a
12 predetermined total capacity for said service function on said selected storage system,
13 using said storage area to perform said service function.

1 21. A method of payment, using a computer, for services from a
2 service provider system to a storage system, wherein said service provider system
3 provides a plurality of service functions of said storage system to a plurality of users, said
4 method comprising:

5 for a service function of said plurality of service functions, determining a
6 set of limitations based on a total number of users of said service function and a total
7 capacity of storage areas used by said total number of users;

8 setting a price for each limitation in said set; and

9 paying a given price for a selected limitation of said set, such that an actual
10 number of users of said service function on said storage system and an actual total
11 capacity of storage area used by said actual number of users does not exceed said selected
12 limitation.

1 22. The method of payment of claim 21 wherein said storage system
2 checks that said actual number of users and said actual total capacity of storage areas used
3 by said actual number of users does not exceed said limitation.

1 23. A licensing system of a storage system for monitoring a service
2 provider system having a plurality of customers using a plurality of service functions,
3 comprising:

4 said plurality of service functions stored on said storage system;

5 a access table comprising authorized customers of said plurality of
6 customers that have access to a service function of said plurality of service functions and
7 a total capacity of storage area needed by said authorized customers when using said
8 service function; and

9 a license checking routine for receiving a customer request for said service
10 function from said service provider system, and determining if said customer request is
11 within a license limit, said license limit having a plurality of combinations for said service

09886350-0824-00
PCT

12 function dependent on a number of users versus total storage capacity allowed for said
13 number of users.

1 24. The licensing system of claim 23 further comprising, rejecting said
2 customer request if said customer request is outside said license limit.

1 25. The licensing system of claim 23 wherein said plurality of
2 combinations of said license limit are grouped into a plurality of sets, each set having an
3 associated licensing fee.

1 26. A method for registering a new service function specified by a user
2 to a service provider system, said service provider system coupled to a storage system
3 having a controller provided with a plurality of service functions and enabled to control
4 accesses to the plurality of service functions , the method comprising:

5 enabling the new service function specified by the user in an access
6 information table connected to the controller;

7 calculating a total area, including a area used by the new service function;
8 and

9 when the total area does not exceed a predetermined value, registering the
10 new service function in the data management table for the user.

1 27. A computer program product stored on a computer readable
2 medium for providing a plurality of service functions to a plurality of users by a storage
3 system, said computer program product comprising:

4 code for receiving a request by a user of said plurality of users for
5 performance of a service function of said plurality of service functions;

6 code for checking if said service function is allowed by said storage
7 system according to a usage constraint, said usage constraint comprising a storage area
8 needed by said service function; and

9 code for when said service function is allowed, performing said service
10 function by said storage system.

1 28. A computer program product stored on a computer readable
2 medium for licensing a service provider system, having a plurality of customers using a

3 plurality of service functions, by a storage system, said computer program product
4 comprising:

5 code for said plurality of service functions stored on said storage system;
6 code for a access table comprising authorized customers of said plurality
7 of customers that have access to a service function of said plurality of service functions
8 and a total capacity of storage area needed by said authorized customers when using said
9 service function; and

10 code for a license checking routine for receiving a customer request for
11 said service function from said service provider system, and determining if said customer
12 request is within a license limit, said license limit having a plurality of combinations for
13 said service function dependent on a number of users versus total storage capacity
14 allowed for said number of users.